

THE LION CENSUS OF 1955

BY

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(*With a map*)

I. 1950-1955.

At the moment of writing the policy of the Saurashtra Government is to grant no permits for the shooting of lions. Whether or not this is wise is doubtful. At worst it is a fault in the right direction.

During the last six years, with the exception of two periods, very few lions have either been shot on permit or poached. The result, as shown by the 1955 census, has been a large increase in the number of lions.

Readers of the article on my first lion census in Volume 49(3) of the Society's *Journal* may remember that a pride of fourteen lions was then counted near the Hill of Sana. These lions continued to remain outside the forest and moved in a northerly direction, spreading, if one is to believe the garbled accounts in the local press, alarm and despondency among the inhabitants who were unaccustomed to seeing lions in such large numbers. There were tales of damage done to local stock, which were probably correct, and tales of unprovoked attack on human beings, which were certainly quite untrue. The net result was that permits to shoot these animals were granted, and five or six of them, some mere cubs, were killed.

Since this unfortunate incident not more than a further five or six lions have been shot on permit, but a small number has been trapped by the forest department.

In 1952, as alarming reports again appeared in the press—this time of a wholesale slaughter of lions in the Sasan neighbourhood, I was asked to hold an enquiry and to report on what had happened. In all there turned out to be ten cases to investigate.

Firstly, three dead lions had been found and two wounded lionesses destroyed between August 22 and September 22, all on the western edge of the Sasan Division of the forest, and all within a limited area, the northernmost case (at Mendarda) being but 12 miles from the southernmost (at Dharampur). Descriptions of the wounds found on these animals were consistent with gunshot wounds. As a number of villagers had recently been issued with guns as members of the home guard it seems more than probable that these persons had shot at the lions, either in protection of their flocks and herds or to scare them away before they could do any damage.

There were no more cases in this area after the police began to investigate.

The case of one of the wounded lionesses is worth recording. At Sandbera Nes, some six miles from Sasan, early on the morning of September 16 a maldhari of the nes drove out his buffaloes from the thorn enclosure surrounding his hut, leaving open the exit. Shortly afterwards a badly injured lioness limped in and settled herself down in

a corner of the nes, outside a long room in which were still penned-up seven goats. This room was divided into two by a six and a half foot partition, the goats being in that half of the room further from the lioness and the entrance.

Although the inhabitants of the nes tried to drive away the lioness by shouting and throwing stones at her, she refused to stir but, later, when the sun got up, needing shade, she moved into the empty half of the room, shortly afterwards leaping over the partition to kill six of the goats, but to eat none of them. The seventh goat forced its way to safety through the flimsy wall of the hut.

By this time a forest guard had gone off to Sasan to report to the Divisional Forest Officer. He was instructed to return and to destroy the lioness, which he did by climbing on to the roof of the hut and firing at her from above.

She was found to have been suffering from extensive gunshot wounds in the head, shoulders, and one paw. In addition a porcupine quill was sticking into her chest. In her weakened state hunger must have compelled her to attack this singularly unpalatable creature.

Of the remaining five cases, one was that of a lion shot by a maldhari in the Girnar Forests because it was harassing his cattle, for which he was punished. Two were mere collections of bones and skin found in the deep jungle, and there is no reason to think that they could not have died in the natural course of events. The remaining two had been shot in the Baroda Gir—one lion on permit, and the lioness at the same time 'because she attacked', an unlikely story unless she too had been wounded.

This visit also enabled me to travel round most of the forest, and in particular to tour the Visavadar Range, an area which I had never been to before. During this trip I cannot remember visiting any nes or village where lions had not been seen or otherwise recorded somewhere close by within the previous forty-eight hours, and in my report I was able to state that it was my general impression that lions were on the increase.

Regarding the other game in the forest I gained a very different impression, for I saw very little and the only areas where it was at all abundant were close to Sasan (where wild pigs were then in great abundance) and near Janwadla. I continued to have an impression of a progressive decrease in forest game during my frequent visits to the Gir between 1952 and 1954 until my stay at Sasan in February 1955 when I went there to plan out the census. On this occasion I saw more forest game than I had ever seen before. During the census in March 1955 and on a recent visit to the forest I have seen game in plenty, and am now of the opinion that it has increased over the last year or so and is increasing.

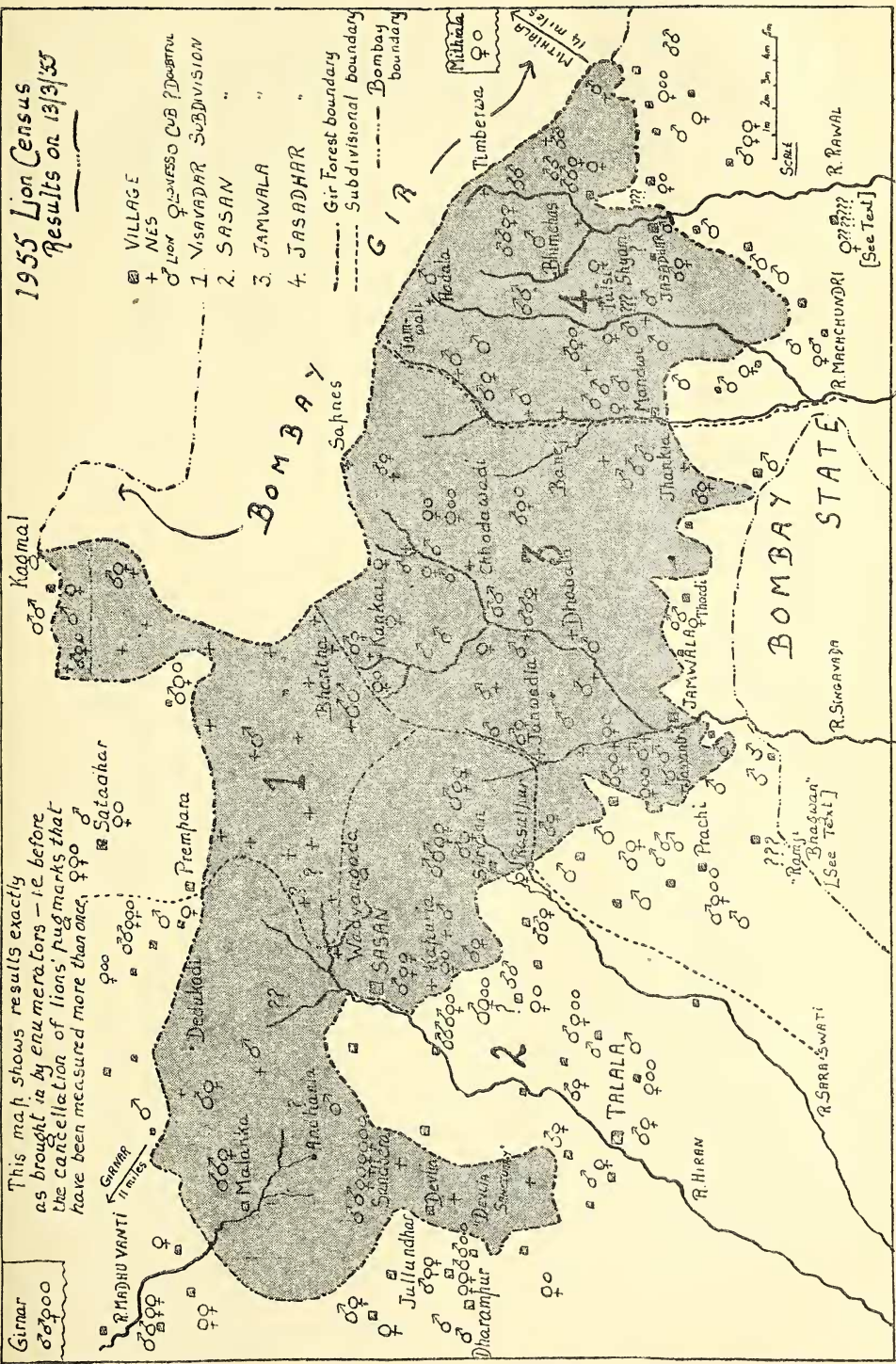
II. THE CENSUS, APRIL 11 TO 14, 1955

The census of 1950 had been such an arduous and difficult operation that I had vowed that I should never again undertake a full-scale census, and so when I was asked to hold one in 1955 I strongly represented that a partial census of the central area of Jamwala, which could be made very accurate, would serve the purpose. This did not meet with approval and once more I was persuaded to undertake a census of the whole Saurashtra area. That this went so smoothly and was so easy to carry out, in spite of my gloomy prognostications, was of course largely due to the excellent

1955 Lion Census Results on 13/3/55

This map shows results exactly as brought in by enumerators — i.e. before the cancellation of lions' pugmarks that have been measured more than once.

- VILLAGE
 NES
 Lion Q. WASSO QUB ? DOWRI
 1. VISAVADAR SUBDIVISION
 2. SASAN
 3. JAMWALA
 4. JASADHAR
- Gir Forest boundary
 --- Subdivisional boundary
 - - - - - Bombay boundary



Sketch map showing enumeration of Lions in Saurashtra 1955

help I had from my assistants and to the experience gained from the first census, but above all to the fact that the Chief Minister was especially interested in the matter with the result that I had every possible facility and cooperation.

Below are given the results of this census together with the figures of the 1950 census for comparison.

AREA		LIONS	LIONESSES	YOUNG	TOTAL	1950
				(Say under 18 months)		
Sasan Range	...	52	43	19	114	68
Visavadar Range	...	11	9	4	24	24
Jamwala Range	...	42	24	14	80	45
Jasadhar Range	...	34	22	9	65	45
Mithiala	...	...	1	1	2	1
Girnar	...	2	1	2	5	3
Other Areas	...	...	...	...	...	14
Baroda Gir	...	not included in this census				24
Totals	...	141	100	49	290	224

Notes on the above

SASAN RANGE includes the old Sasan forest division, a large strip of Visavadar Mahal to the north, the Jetpur Forest and the Devalia Sanctuary with a strip of revenue land to their east, the revenue lands between the Devalia Sanctuary and the Sasan forest, and the revenue lands around Talala and to the east and west of it.

VISAVADAR RANGE, JAMWALA RANGE, JASADHAR RANGE includes the revenue lands bordering these ranges.

Figures for the Jamwala Range 1950: These are misleading as for three days previous to the census a very large fire had swept much of the range, driving game and lions out of it. Therefore these figures are lower than would normally be expected. In the test count of a mere 2/3rds of the range 42 lions were recorded.

MITHIALA, GIRNAR. These two areas are situated at some distance from the Gir Forest. Lions are nowadays permanent inhabitants of both areas.

These figures show that there has been a substantial increase in the lion population since 1950. An important point to note is that on this present occasion it was possible to include in the census certain areas outside the forest that were beyond the scope of the 1950 census. These produced 40 lions, making the comparative figures for the areas covered in both censuses 250 to 200, that is an increase of 25 per cent.

We may then conclude that an all-round increase of 25 per cent is not far from the truth.

Young Lions: Any lion with a pugmark of 4.5" or less in length is considered to be a young lion, i.e., not more than 18 months old.

The proportion of young lions has decreased from 19 per cent in 1950 to 16.9 per cent in 1955. The latter, if my arithmetic is correct, is the number of young lions to be expected in a stationary population with an average life span of just under 9 years. Unfortunately information on the length of life of lions in their wild state is most unsatisfactory, varying from the 10 years of one 'expert' to the 30 years of another! As the average age of a lion seems likely to be more than 9 years the number of young lions probably still indicates an increasing population, though one that may be increasing more slowly than five years ago. It should also be remembered that very young cubs will not usually enter the census. I do not think the decrease in the number of young lions is yet in any way serious.

Proportion of Lions to Lionesses: It is difficult to say to what extent these figures are accurate, as the method of determining sex by the shape of the pugmark is far from infallible, as was made obvious to us when we came across instances of the same lion being recorded as a male in one place and as a female in another.

Nevertheless old Junagadh records of the sex of lions shot and found dead, and every census have shown a large preponderance of lions as may be seen from the following figures :

1936 to 1947: Lions shot or found dead in Junagadh Gir: Lions 45; lionesses 28.

1936 Census: Lions 143; lionesses 91.

1950 Jamwala Test Count: Lions 23; lionesses 13.

1950 Census (determination of sex only made in Baroda Gir and Jasadhar Division): Lions 42; lionesses 19.

1955 Census: Lions 141; lionesses 100.

Notwithstanding these records almost everyone insists that the reverse is the case and that there are more lionesses than lions. I respectfully suggest to these gentlemen that their belief in the preponderance of lionesses is due to the fact that all young lions, being maneless, look like lionesses from a distance.

Distribution of Lions: As was expected the greatest concentrations of lions were found on, or outside, the forest edges near revenue villages. The most heavily populated regions were near Talala, and on the forest borders of the Jawantri and Janwadla centres of Jamwala. With the exception of the Chhodawadi centre of Jamwala, and Jasadhar, the middle forest regions contained many fewer lions.

As at the last census, the Jasadhar Range showed itself to be the home of big lions, for there four pug lengths of over seven inches were recorded. The only other lion of such pug measurements was found near Sasan.

CENSUS METHODS

As there have been so many queries as to how the census was carried out and as so many mistaken ideas about it are current, it will perhaps not be out of place to recapitulate the census methods.

I possess no form of magic by which I can prove the accuracy of my censuses, nor do I pretend to be able to find exact numbers of lions—only the simple can expect that—but I myself believe that the final figures are not far removed from the truth and, as I have been extremely cautious in my count, I should be very much surprised if there are less lions than the figures I have given.

However, what cannot be stressed too strongly, and what it is very difficult to make people realise is that the main object of the census is to find out the increase or decrease in the numbers of lions, since to know this trend is vital to any policy of protection—much more important than to know the exact number of lions.

If censuses are carried out at regular intervals *and if exactly the same methods are used* they will produce this information admirably. The 1950 and 1955 censuses were carried out in an identical manner and therefore one may be confident that the comparative figures are reasonably accurate.

The census is based on three main factors. Firstly, as the measurements of the full length and breadth of the front pugmarks are seldom identical in any two lions, such data can be used for identifying individual lions in much the same way as fingerprints are used by the police for identifying criminals. Secondly, lions move about a lot at night, and for preference move along roads and footpaths (the silence and ease with which they can do so being of value to them while hunting). Thirdly, from December to June these roads and footpaths are covered with a particularly fine dust, which is a perfect medium for recording pugmarks exactly. Therefore, if a large number of enumerators is sent out over a network of beats to cover the areas inhabited by lions, the majority of their tracks will be found and their footprints measured. Even if lions do not walk along footpaths or roads, they are likely to cross them and so enter into the census.

Another count is then held with the object of recording most of those lions which have, for one reason or another, escaped the first day's count.

For the purpose of the census the areas inhabited by lions are divided into two divisions, namely Sasan and Jamwala. The former is also subdivided into the Sasan and Visavadar areas, and the latter into Jamwala and Jasadhar. Mithiala and Girnar are well separated from the Gir Forest and the number of lions recorded there is based on information received from the forest staff and not on a count. Every area where lions may be expected to be found is thus covered.

The subdivisions are further divided into a number of centres, each under the control of a supervisor whose duty it is to brief and control the enumerators. The enumerators work in pairs, and as far as possible an experienced man such as a beat guard is coupled with one less experienced.

The measurements, which are made with thin bamboo strips which can be broken to an exact length, are first handed in to the supervisors, who label them with all relevant information and then take them to subdivisional headquarters from whence they are passed on to Sasan or Jamwala, where the information is entered on to a series of maps.

From these maps lions which have been counted more than once are noted and only one lion counted in each such instance. For this purpose, of course, a certain variation in measurements is allowed, but the principle employed is that if there is any suspicion at all that a lion has

been counted more than once only one lion is counted finally. All suspicious measurements are also eliminated. For instance any lone 'lions' with pug lengths of less than 4.5" are crossed out, as young lions of this age will in all probability still be accompanied by their mothers. Such measurements are usually those of panthers taken by mistake. Other checks on measurements are the ratio between the length and breadth of pugmarks (which should work out at between 1.1 and 1.3) and the number of lions moving together.

A POPULAR FALLACY REGARDING THE LION CENSUS

A criticism made by several people is that the census, to be successful, must be held in the hot weather, that is in May, on the assumption that drinking places are then fewer, and under the misapprehension that the census is based on counting pugmarks—or the lions themselves—at such places.

If the drinking places in the Gir were very limited in number all that would be necessary would be to keep a watch on them and measure the pugmarks of the lions that come to drink, for lions will obviously drink at least once in the twenty-four hours. But this is far from the case as the Gir possesses a number of perennially flowing rivers along any part of which a lion may drink. Furthermore, as the edges of the rivers are nearly always of rock, grass or coarse sand or shingle, they are almost always unsuited to the measurement of pugmarks. Lions may also drink from village water troughs, as I myself have seen. Drinking places, then, play a very minor part in the census.

Another argument for holding the census in the hot weather is that lions then will move about less. The latter is probably true but the more lions move about the more chance of recording their pugmarks.

III. CONCLUSIONS

Although the census figures show that the rigorous control over the shooting of lions in recent years has been most successful, this increase in numbers brings problems in its wake.

The Gir Forest obviously can only hold a certain number of lions, and once this is exceeded one may expect a progressive decrease in the numbers of forest game and a corresponding increase in the losses of domestic stock up to a point at which they cannot be endured.

At the moment the forest game does not seem to be decreasing, and one concludes from this that these animals must therefore form a small proportion of the lions' food, the greater amount of what they eat being domestic stock.

From random figures taken five years ago I estimated the annual loss of cattle and buffaloes in the nesses and forest villages, and villages at the forest edges, to be in the neighbourhood of 3% of the total stock—and the total stock is very large indeed. Government has also gone into this matter recently and has, I believe, reached conclusions similar to mine.

Evidence in support of domestic stock forming the greater part of what the lions eat is that lions are nearly always found prowling in the neighbourhood of villages and nesses, and it is near such places that the vast majority of them is recorded in the censuses. (See map.)

So far the maldhari has, on the whole, been fatalistic about these losses and seems to regard them as part of the terms upon which he

gets good cheap grazing. However, any considerable increase in them will undoubtedly be viewed in a different light.

I feel then that the time has come to grant, say, five or six permits per annum for shooting lions, as an experimental measure, and to hold check counts, perhaps annually. The subsequent issue of permits can be regulated in accordance with the results of these, or of full scale censuses which may be held when considered necessary.

I would suggest that the check censuses be held in the Jamwala sub-division, where this matter has been most studied and where there are a number of men trained in census work. Such check censuses would be easy to carry out, cheap, and would soon become routine.

IV. CENSUS EXPERIENCES

The management of the Sasan Division was in the hands of the Yuvraj of Jasdan and K. S. Lavkumar of Jasdan than which two expert naturalists I could not have had better helpers for this census work. As in 1950 I myself took the Jamwala Division, on this occasion helped by the brothers Dost and Nur Mahomed, both great 'characters' and persons of much ability.

The whole party foregathered at the Sasan Rest House on arrival, and the following morning made a visit to Devalia, the scene of recent attempts to catch lions. One lioness had already been caught, and others were caught later.

The method is simple. A wooden cage with iron bars at the sides is placed by the road with a goat tied up in it at the end further from the entrance. The lion attracted by the bleating of the goat enters the cage and in doing so presses down a board which causes the entrance door to drop behind him and another gate to fall between him and the goat, thus saving the goat! Nevertheless there were remains of dead goat in the second partition and, as the cage was only six feet long, one imagines that the lion in his first rush receives the second gate on his neck whilst the entrance door guillotines his tail.

A good story had already grown up about the captured lioness. As she was being carried to Junagadh by night the lorry that was transporting her broke down. The furious roaring of the lioness from the stranded lorry attracted all the lions in the neighbourhood to see what was amiss with her, with the result that the lorry driver and his mate spent a night of terror in their cabin with more than twelve lions prowling around them trying to get to the lioness.

As our plans had been drawn up and all arrangements made during a previous visit to the Gir in February, our duty now was mainly to travel all over our divisions to see that these arrangements were being carried out. The important thing was to visit every centre and there check the work of at least one or two enumerators in the field—in short to give the impression we were taking the census seriously and expected everyone else to do so. This was hard work as it meant travelling many miles in an open jeep in the blazing sun of a March heat wave. There were few parts of our division we did not visit; the narrow valley of Jamwala where thousands of acres had recently been devastated by a forest fire; Bhimchas, where Bhim, being refused water, split the rock with a blow into a deep gorge through which the river flows in a channel that legend says is bottomless; the barren lonely wastes of the Hadala and Timberwa

uplands where one gets the impression of having reached the uttermost parts of the world ; a night spent in the open in the forest compound of Jasadhar surrounded by its babul jungle ; once more a taste of the famous hospitality of Lord Krishna's priests at Tulshi Shyam ; innumerable cups of tea wherever we paused, from Rabaris, forest guards, pasaytas and others ; and lastly a large part of a day spent most peacefully under a pipal tree in Thordi drinking curds and eating chapatis when our jeep broke down.

On the first day of the census enumerators walk over their beats to get to know them and to mark any lions' pugmarks that are there already so that they shall not count them on the first day of the census, though the chance of this is small as by day at this season a strong sea breeze arises which soon makes fresh pugmarks look old. It is on the second and third days that the count is made.

On the second day of the census we made our trip to Jasadhar, leaving the following evening so that we could collect both days' measuring sticks, and then deal with those of both days from the Jamwala subdivision when we returned there in the evening.

During our stay at Jasadhar an amusing incident occurred. A pasayta (for pasaytas, being government servants, had been recruited for the good work) brought in his little bundle of measuring sticks from his village and the neighbourhood round about—an obviously simple straightforward type with no guile about him (though I must qualify this by saying that I know it is dangerous to make statements like this in Saurashtra). The bundle of sticks measured as follows : $6.7'' \times 5.2''$: $6.7'' \times 4.9''$: $2.2'' \times 1.8''$: $2.2'' \times 1.7''$: $2.3 \times 1.7''$: $2.2'' \times 2.2''$: $2.2 \times 1.7''$. This intriguing collection of measurements was meant by him to represent two lionesses with three cubs apiece (as they were all found in the same place), obviously a very simple and just division of the pugmarks he had measured. However, as the length of the first two measurements was the same and the ratio between the second measurements was too high, there was more than a strong suspicion that the front and the hind feet of the same animal had been measured. This left in our minds the delightful picture of a large (very large) lioness wandering about the outskirts of the pasayta's village accompanied by her six little (very little) cubs. This would have just been possible had not the footprints of the 'cubs' been smaller than cubs' footprints could have been even at birth. No ! we regretfully decided that the cubs were one village cat wandering around in circles confusing its own tracks.

Pasaytas (and it is perhaps necessary to explain to the uninformed that a pasayta is a village policeman) certainly provided the census with light relief, for when we returned to Jamwala we found another bunch of measuring sticks sent in by the pasayata of a village not far away, the measurements of which were those of long thin footprints, something I imagine like those of young Abominable Snowmen. However, as we were not on this occasion taking a census of Abominable Snowmen in the Gir Forest these measurements did not enter into the count, and we made an immediate visit to the pasayta's village, where we found his wife but not himself—he had had an urgent call to a distant sick relative. As the pasayta's name was Ramji Bhagwan, we decided that he had considered himself fully capable of conducting his census work *in absentia* from some distant Kailas.

When we had finished at Jamwala we had had neither sight nor